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OUTLINES

OF

THE NERVES:

WITH SHORT DESCRIPTIONS.

DESIGNED FOR THE USE OF MEDICAL STUDENTS.

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SECOND EDITION.

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INDEX.

PREFACE

TO THE FIRST EDITION.

To obtain a correct *general* idea of a subject is the best means for subsequently acquiring a more accurate and extensive knowledge. Hence, in all sciences, Elementary Treaties are placed in the hands of beginners, before the fuller and more comprehensive works.

It is hoped that these Outlines will afford to Students of Medicine a simple and concise view of the Nerves, so that the most important branches may be learned without difficulty: and, in order to avoid the confusion and trouble arising from references made in the usual way, the *names* have been placed on the several filaments.

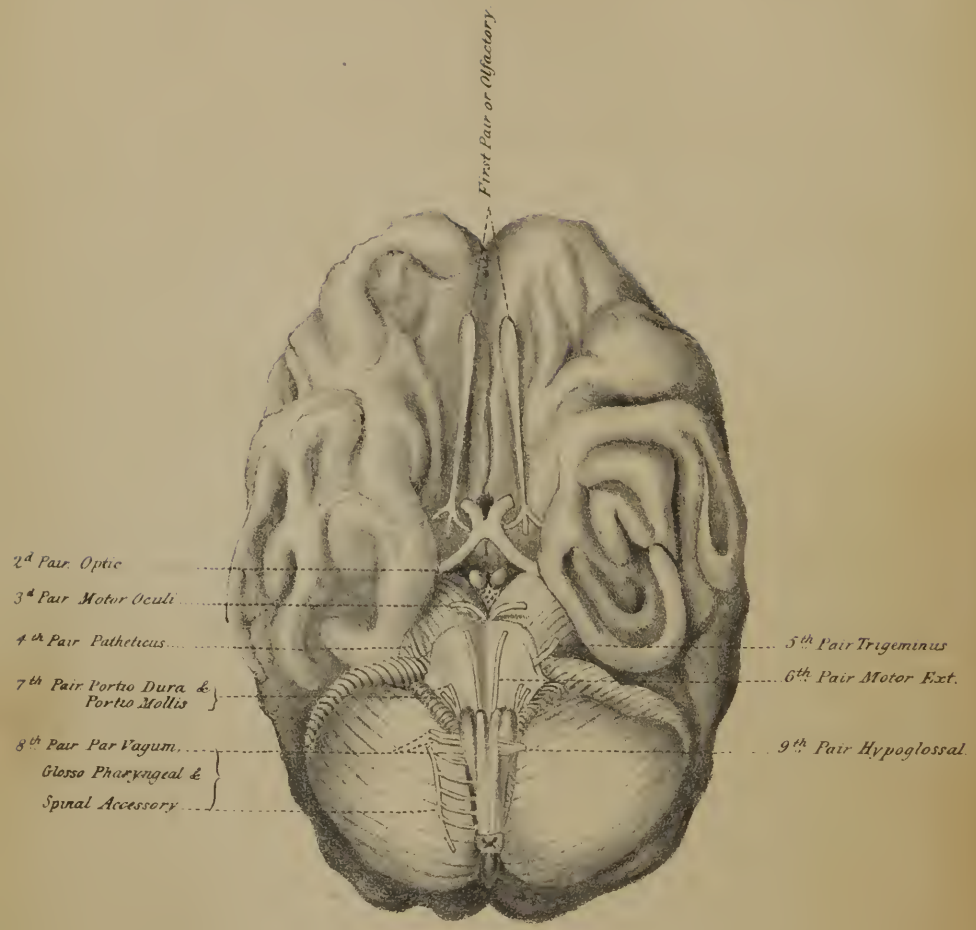
In a work of this size, it is not to be supposed that all the minutiæ of the discoveries of the nervous system are to be found; much less that there should be the shadow of any thing original. If what is already known be made clear to students, and an easy mode of acquiring it be presented to them, the object will be

accomplished. Most of the Plates are altered from others, so as to suit the terms and descriptions of the standard text-books of the day.

I am indebted to Dr. Lowber for the Delineations.

JOHN NEILL.

Philada. Nov. 1st, 1815.



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P. S. Duval Lith. Phil.a

THE NERVES.

There are *Thirty-nine* pairs of Nerves which arise from the Spinal Marrow and Brain; nine of these pairs emerge through foramina of the Cranium, and are called *Cranial*, the remaining thirty escape through the intervertebral foramina of the Spinal Canal, and are called *Spinal*.

CRANIAL NERVES AND THEIR ORIGIN.

PLATE I.

These are designated numerically with reference to the order in which they apparently arise from the base of the Brain. They also receive names from their function and mode of distribution.

They are as follows: —

1. **Olfactorius.** — The Olfactory rises by three roots, from the anterior lobe of the brain, which coalesce in the fissure of Sylvius.

2. **Opticus.** — The Optic nerve arises from the Thalamus nervi optici and the Tubercula quadrigemina.

3. **Motor Oculi.** — The Motor nerve of the eye-ball arises from the internal face of the Crus Cerebri.

4. **Patheticus or Trochlearis.** — The Pathetic nerve arises from the Valve of the Brain.

5. **Trigeminus.** — The Trifacial nerve emerges from the side of the Pons Varolii near the Crus Cerebelli.

6. **Motor Externus.** — The External Motor of the Eye-ball nerve arises from the Corpus Pyramidale.

7. **Facialis vel Portio Dura.** — The Facial nerve arises from the junction of the Corpus Restiforme and Pons Varolii.

Auditorius vel Portio Mollis. — The Auditory nerve arises from the Calamus Scriptorius and Corpus Restiforme.

The *pars intermedia* of the 7th arises from the Corpus Restiforme, and may be considered as the posterior or sensitive root to the Facial.

8. **Glosso-Pharyngeus.** — The Glosso-Pharyngeal nerve arises in the fissure between the Corpus Olivare and Corpus Restiforme.

Pneumogastricus vel Vagus. — The Pneumogastric nerve arises from the same fissure as the Glosso-Pharyngeal, but behind that nerve.

Accessorius. — The Spinal Accessory nerve arises by numerous filaments from the Medulla Oblongata and Medulla Spinalis as low down as the Fourth Cervical Vertebra.

9. **Hypoglossus.** — The Hypoglossal nerve arises in the fissure between the Corpus Pyramidale and Corpus Olivare.

CRANIAL NERVES.

Course and Distribution.

I. OLFACTORIUS.

PLATE II., FIG. 1.

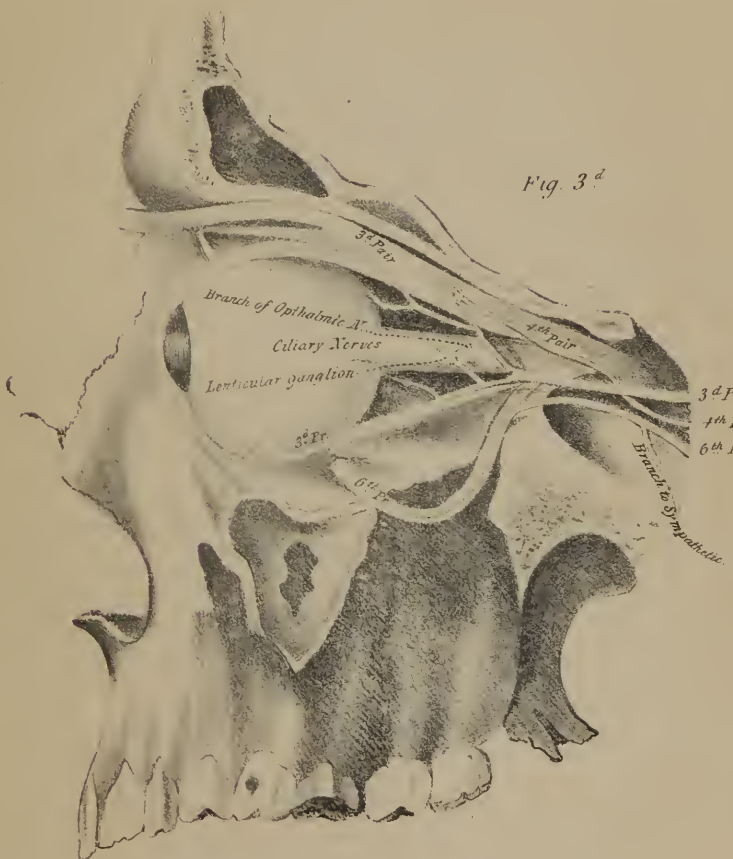
It passes forwards from its origin on the under surface of the anterior lobe of the brain, and converges gradually towards its fellow,

Verres

Fig. 2.d

Fig. 1.st

Fig. 3.d



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so as to reach the cribriform plate of the ethmoid bone. The anterior extremity is enlarged into what is called the Bulb, from which proceed filaments which penetrate into the nose through the perforations of the Cribriform plate, and spread themselves on the Schneiderian membrane. It is exceedingly soft and pulpy in its whole length.

II. OPTICUS.

PLATE II., FIG. 2.

The optic is a large and flattened nerve, which passes forwards and inwards in front of the tuber cinereum, joining its fellow and forming the *Chiasm*, which resembles the letter X. It afterwards enters the orbit, through the Foramen Opticum of the sphenoid bone, and joins the retina of the eye.

III. MOTOR OCULI.

PLATE II., FIG. 3.

This nerve proceeds from its origin towards the external margin of the cavernous sinus; and, entering the orbit, through the Sphenoidal Foramen, it divides into two large branches, which are distributed to most of the muscles of the eye-ball. It also sends a short branch to the posterior margin of the *Lenticular* or *Ophthalmic* ganglion. This ganglion is situated at the outer side of the optic nerve, in the orbit of the eye, and is about one line in diameter, being flattened. Two nerves concur to form it—the branch just alluded to from the 3d pair, or Motor Oculi, and the Ramus Ciliaris, which comes from the Ophthalmic branch of the 5th, or Trigeminus. From this ganglion arise most of the ciliary nerves, which are about 20 in number, and are spent upon the choroid coat of the eye and the iris.

IV. PATHETICUS.

PLATE II., FIG. 3.

The Trochlearis or Patheticus is the smallest cranial nerve, being not larger than a sewing thread. It passes through the Cavernous Sinus, and then enters the orbit through the Sphenoidal Foramen. It is distributed upon the superior oblique muscle of the eye, entering it near its middle.

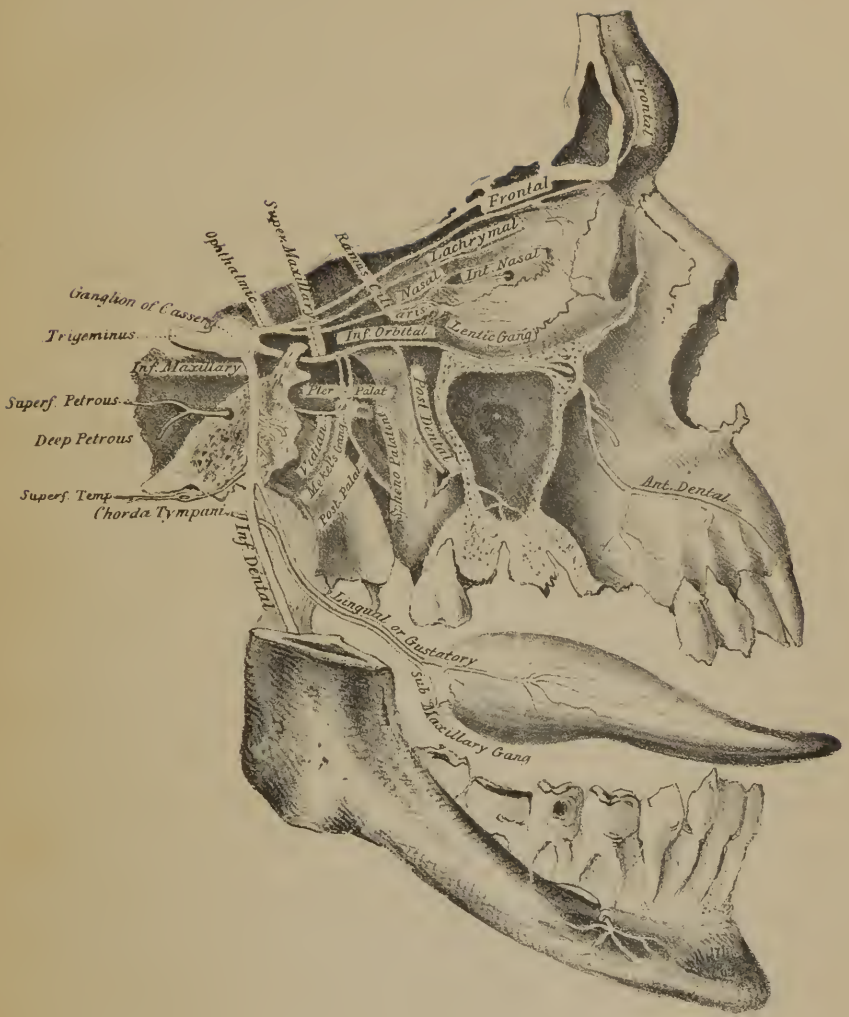
V. TRIGEMINUS.

PLATE III.

This is the largest cranial nerve; it has formed upon it, in a canal of dura mater, a large ganglion, called the Ganglion of Casser, and then divides into three large trunks called Ophthalmic, Superior Maxillary, and Inferior Maxillary Nerves.

1. OPHTHALMIC. — The first branch of the Trigeminus passes through the Cavernous Sinus, and enters the orbit through the sphenoidal foramen. While in this foramen it divides into three branches, called Nasal, Frontal, and Lachrymal.

The Nasal branch of the Ophthalmic ascends towards the internal face of the orbit. It gives off a branch called *Ramus Ciliaris*, which joins the Lenticular Ganglion, which was referred to in the description of the third pair. Afterwards it gives off a branch called *Internal Nasal*, which enters the cavity of the cranium through the anterior orbitary or ethmoidal foramen, and then passes into the nose, through the most anterior perforation of the cribriform plate, descending in a groove upon the under surface of the nasal bone to the Schneiderian membrane. The remainder of this nerve is spent upon the muscles, eye-lids, conjunctiva, &c.



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The Frontal is the largest branch of the Ophthalmic. It divides into filaments, one of which emerges from the orbit through the supra-orbitary foramen, and the other passes out near the trochlea. It supplies the muscles and integuments of the forehead and scalp.

The Lachrymal traverses the external side of the orbit, and supplies the lachrymal gland. It sends some filaments also to the surrounding structures.

2. **SUPERIOR MAXILLARY.**—This nerve leaves the Ganglion of Casser, and, passing through the Foramen Rotundum of the Sphenoid Bone, enters the pterygo-maxillary fossa. It divides into two large branches, called Infra-orbital and Pterygo-palatine.

The Infra-orbital passes forwards, and gives off a branch called *Posterior dental*, which supplies three molar teeth, and a part of the antrum and the gums. The infra-orbital, in its course through the canal, sends off *anterior dental* nerves to the remaining teeth and gums. It emerges at the infra-orbitar foramen of the superior maxillary bone, being divided into numerous filaments which supply the skin and muscles of the face.

The Pterygo-palatine descends as a single or double trunk to the outside of the spheno-palatine foramen, and there joins the *Ganglion of Meckel*, from which proceed several branches, viz., the *Spheno-palatine* branches, which enter the nose through the Spheno-Palatine Foramen; one of which is exceedingly long, and called *Naso-Palatine*, it descends through the Foramen Incisivum to the roof of the mouth, where, with its fellow, it forms the Naso-palatine, or Cloquet's ganglion. [Plate II., Fig. 1.]

The *Posterior palatine* nerve descends from Meckel's ganglion through the posterior palatine foramen to the Palate and Fauces. Some suppose this nerve sends a branch along the roof of the mouth to the Naso-palatine Ganglion.

The *Vidian* or *Pterygoid* or *Recurrent nerve* proceeds backwards from Meckel's ganglion through the Pterygoid foramen of the Sphenoid bone. While in this foramen it divides into two trunks called the Superficial Petrous and the Deep Petrous, which enter the cavity of the cranium through the Anterior Foramen Lacerum.

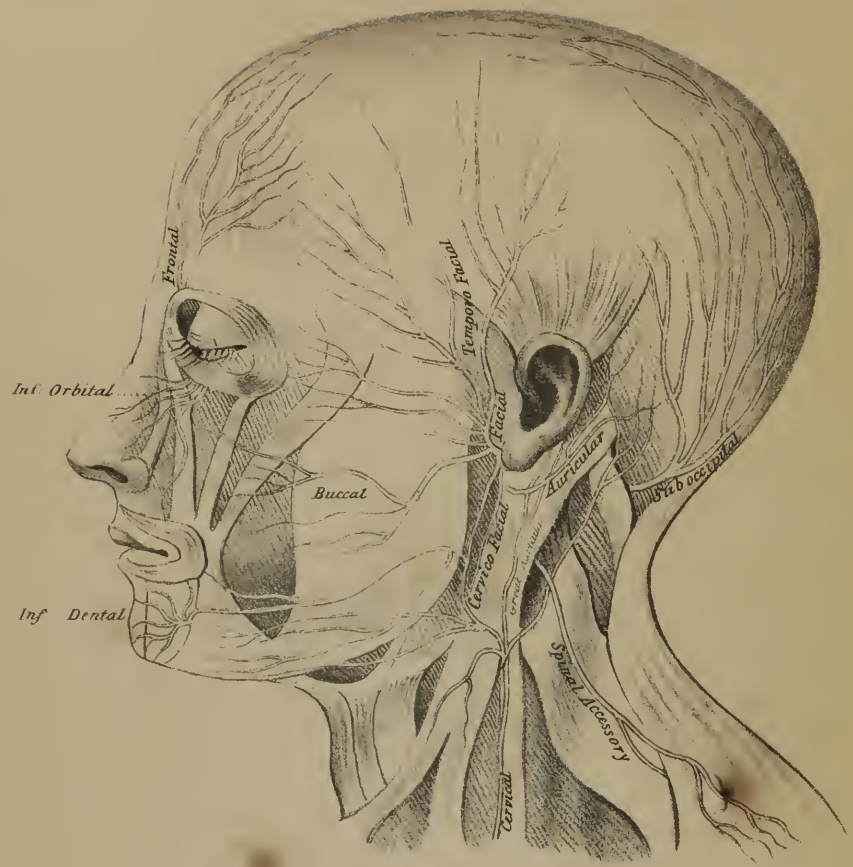
The *Superficial Petrous* traverses a gutter on the superior surface of the Petrous bone, and disappears through the Vidian Foramen or Hiatus Fallopii. It adheres to the Facial nerve in the aqueduct of Fallopius, after leaving which it traverses the tympanum, and receives the name of *Chorda Tympani:* it then emerges at the Glaserian fissure or foramen, and, descending, joins the Gustatory nerve, with which it continues until it reaches the Submaxillary ganglion.

The *Deep Petrous* enters the carotid canal, and anastomoses there with the branch of the Motor Externus, or sixth pair, around the internal carotid artery joining the ganglion of Laumonier, which is usually considered as the origin of the sympathetic nerve.

3. INFERIOR MAXILLARY.—Is the third branch of the trigeminus, and is the largest of the three. It escapes from the cranium through the foramen ovale of the sphenoid bone, and divides into anterior and posterior branches. The anterior branches are spent upon the Masseter, Temporal, Buccal, and Pterygoid muscles. The Posterior consists of the Lingual or Gustatory, Inferior dental, and Superficial Temporal nerves.

The Lingual, after receiving the chorda tympani at an acute angle, between the pterygoid muscles, enters the side of the root of the tongue.

The *Submaxillary Ganglion* is joined by filaments from the lingual nerve and chorda tympani. The branches from this ganglion are distributed to the Submaxillary gland, &c. The Lingual or Gustatory nerve supplies the papillæ upon the anterior portion of the tongue.


Frontal
Temporo Facial
Int. Orbital
Facial
Auricular
Sub occipital
Buccal
Cervico Facial
Inf. Dental
Spinal Accessory
Cervical


Auditory or
Portio Mollis


Facial
Superf. Petrous
Chorda Tympani
Facial
Gustatory

Inferior Dental descends between the Pterygoid muscles and enters the Posterior Mental Foramen of the Lower Jaw. While traversing the jaw, it sends numerous branches to the teeth and gums; and a large branch, called *Mental*, comes out at the Anterior Mental Foramen, which is distributed to the chin and lower lip.

Superficial Temporal is formed by a union of fasciculi from the Lingual and Inferior Dental. It passes outwardly, giving branches to the Parotid gland, and afterwards, in company with the Temporal Artery, is distributed to the integuments on the side of the head.

The *Otic Ganglion*, a small, reddish, gray, body, is situated upon the inferior maxillary nerve near its emergence from the foramen ovale.

VI. MOTOR EXTERNUS.

PLATE II., FIG. 3.

This nerve, when passing through the cavernous sinus, sends a branch to join the ganglion of Laumonier and the Deep Petrous nerve in the carotid canal, after which it enters the orbit through the sphenoidal foramen, and is distributed entirely upon the external rectus muscle.

VII. FACIALIS ET AUDITORIUS.

PLATE IV.

The seventh pair consists of two principal trunks — the Facial or Portio Dura, and Auditory or Portio Mollis.

THE FACIAL, OR PORTIO DURA leaves the cavity of the cranium by entering the Internal Meatus Auditorius of the temporal bone, in which it is accompanied for a short distance by

the deep petrous, which becomes the Chorda Tympani nerve. It escapes from the temporal bone at the stylo-mastoid foramen, and assumes a radiated form, to which the name of Pes Anserina is given, the filaments of which are denominated as follow :

Post-Auricular.— This extends from the Stylo-mastoid Foramen to behind the centre, supplying the muscles, integuments, &c. It also sends off anastomotic branches downwards.

The Facial then penetrates the Parotid Gland, in which it divides into several branches ; several of which are called

Temporo-facial. — These are distributed to the muscles on the upper part of the side of the head.

Buccal. — These are three in number, and supply the muscles of the cheek.

Cervico-facial. — This branch descends to join the anastomosis formed by the three superior cervical nerves, frequently called Cervical Plexus. The Facial nerve does not supply the skin, but the muscles of the face.

AUDITORY OR PORTIO MOLLIS— This nerve enters the Meatus Auditorius Internus with the Portio dura. It is distributed to the Labyrinth, &c., of the Internal Ear. [Refer to Plate IV., Fig. 2.]

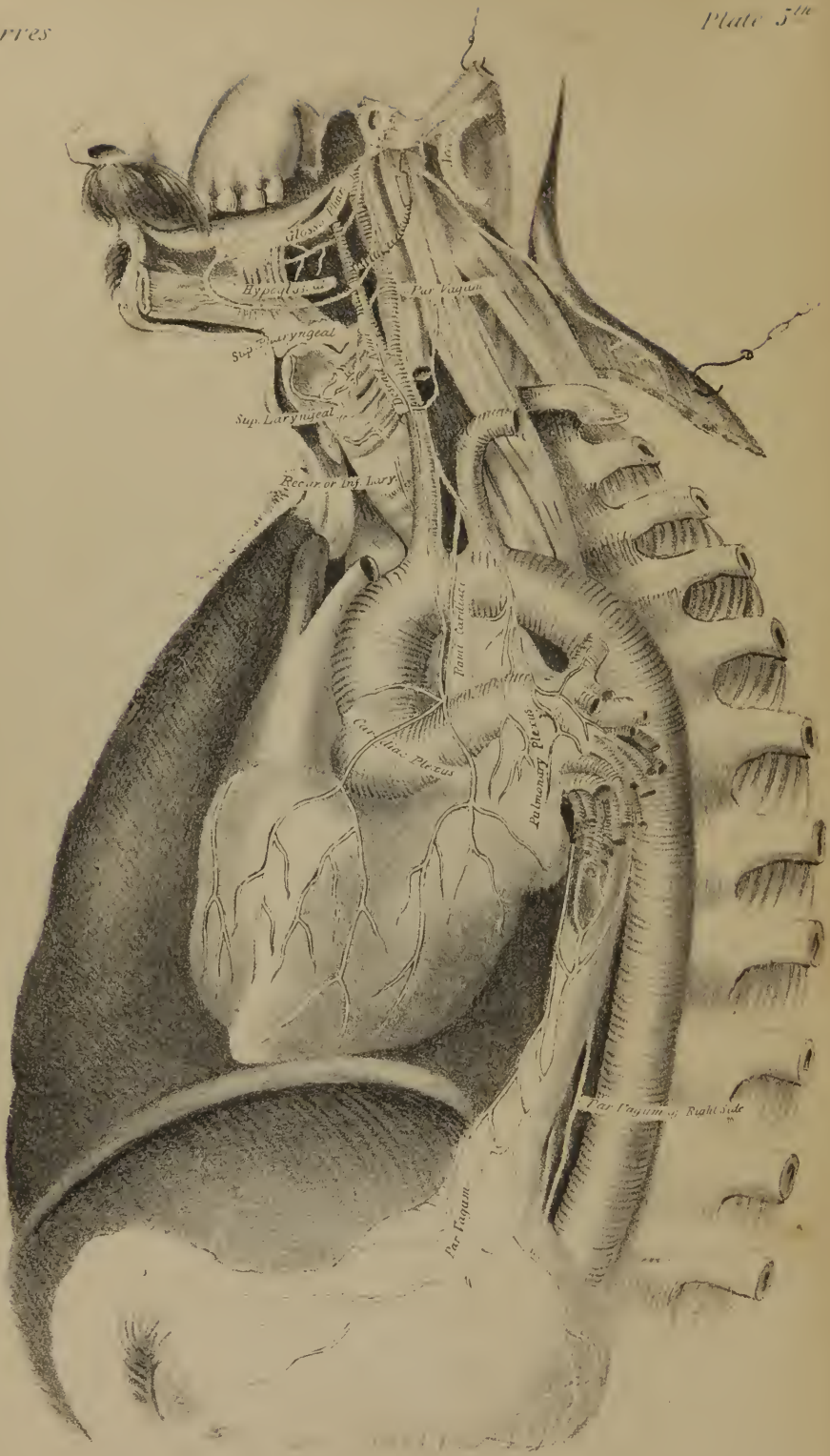
VIII. GLOSSO-PHARYNGEAL, PNEUMOGASTRIC, AND SPINAL ACCESSORY.

PLATE V.

The Eighth nerve escapes from the cavity of the cranium through the posterior foramen lacerum, in company with the Internal Jugular vein, from which it is separated by a small spine of bone. It consists of three principal trunks, viz :

Nerves

Plate 5th



GLOSSO-PHARYNGEAL.—This nerve, after leaving the base of the cranium, is separated from the Pneumogastric by the Internal Jugular vein. Upon it are two small Ganglions. It is directed downwards and forwards between the Internal Carotid Artery and the Stylo-Pharyngeus muscle, afterwards between the latter and the Stylo-Glossus muscle: it accompanies the latter to the side of the root of the Tongue. It supplies the Papillæ of the base of the Tongue, the Tonsils, and Soft Palate. It also sends branches to the muscles of the Tongue and Pharynx, and to the Pharyngeal Plexus of the Sympathetic and Pneumogastric nerves. A branch called *Jacobson's Nerve* enters the Tympanum through a small opening between the Jugular and Carotid Foramina, to form a *Plexus* upon the inner wall of the Tympanic in which the Fifth Pair and Sympathetic communicate.

PNEUMOGASTRIC.—This nerve is frequently called Par-vagum, and is closely united to the other branches of the eighth pair and also to the ninth, after its exit from the cranium. An enlargement exists at its upper part called the Plexus Gangliformis. It descends the neck between the Internal Carotid Artery and the Internal Jugular vein, and is enveloped in their sheath. At the root of the neck, upon the right side, it passes in front of the Subclavian Artery, but on the left it crosses the root of the Subclavian and the arch of the Aorta. It is then directed backwards and downwards into the cavity of the Thorax, and becomes connected with the root of the Lung, after which it applies itself to the Œsophagus, and follows it through the Diaphragm to the Stomach: the Par-vagum of the left side is on the anterior surface of the Œsophagus, and that of the right side on its posterior surface. It gives off three sets of branches, viz.: Cervical, Thoracic, and Abdominal.

Cervical Branches.—These are in the Neck, and are three in number.

The Superior Pharyngeal.—It anastomoses with the Glosso-Pharyngeal and forms the Pharyngeal Plexus on the middle constric-

tor of the Pharynx. A filament called Inferior-Pharyngeal sometimes arises from the Par-vagum, below the Superior, and is spent upon the Pharynx. There is an enlargement and softening of the Par-vagum nerve at the origin of the Pharyngeal branches, which is called the *Gangliform Plexus.*

Superior Laryngeal. — It arises from the Gangliform Plexus, anastomosing the Pharyngeal Plexus, &c., and divides into two branches, which supply the Mucous Membrane of the Larynx and Vocal muscles.

In its descent, the Par-vagum gives off, at the lower part of the neck, two or three filaments called *Rami Cardiaci.* These reach the arch of the Aorta and anastomose with the Superficial Cardiac nerve.

Inferior Laryngeal. — This is often called *Recurrent Laryngeal.* On the right side it arises from the Par-vagum after the trunk has passed in front of the Subclavian Artery. It then winds around the Subclavian, forming a loop: upon the left side it forms a loop around the Aorta. Ascending upon the side of the Trachea and Larynx, it is distributed to its muscles. It also gives off branches called *Cardiac*, *Pulmonary*, *Œsophageal*, &c.

Thoracic Branches. — These branches of the Par-vagum are the *Tracheal*, which form

The Anterior Pulmonary Plexus — from which branches are sent to the Lung along the course of the Pulmonary Artery.

The Posterior Pulmonary Plexus — is formed by several filaments of the Par-vagum and Sympathetic. Its branches pass through the Lung along with the Bronchial tubes, and are distributed to its mucous membrane and glands.

Abdominal Branches — The Par-vagum of the right and left sides form a plexus around the cardiac orifice of the stomach. The right nerve is then distributed along the lesser curvature

and posterior face of the stomach, anastomosing with the gastric plexus and solar plexus. The left supplies the anterior face of the stomach and its lesser curvature, anastomosing with the nerve of the right side and gastric and solar plexuses.

SPINAL ACCESSORY. — The Accessory nerve is directed outwards and backwards, and divides into two branches. The internal branch gives filaments to the superior pharyngeal nerve. The external descends for about two inches behind the internal jugular vein, and afterwards pierces the sterno-cleido-mastoid muscle at the junction of its upper and middle thirds. It is augmented by branches from the second and third cervical nerves, and is distributed by numerous filaments to the trapezius muscle.

IX. HYPOGLOSSAL.

PLATE V.

This nerve adheres for an inch to the pneumogastric nerve. It crosses the external carotid artery, just below the origin of the occipital artery, making a large curve below the digastric muscle, and ascends to the tongue, being concealed by the mylo hyoid muscle. As it crosses the carotid artery, it sends off a large branch called *Descendens Noni*, which descends upon the sheath of the vessels upon the neck, anastomosing with the cervical nerves, and then supplies the sterno muscles. The hypoglossal nerve is distributed to the muscles of the tongue.

SYMPATHETIC NERVE.

PLATE VI.

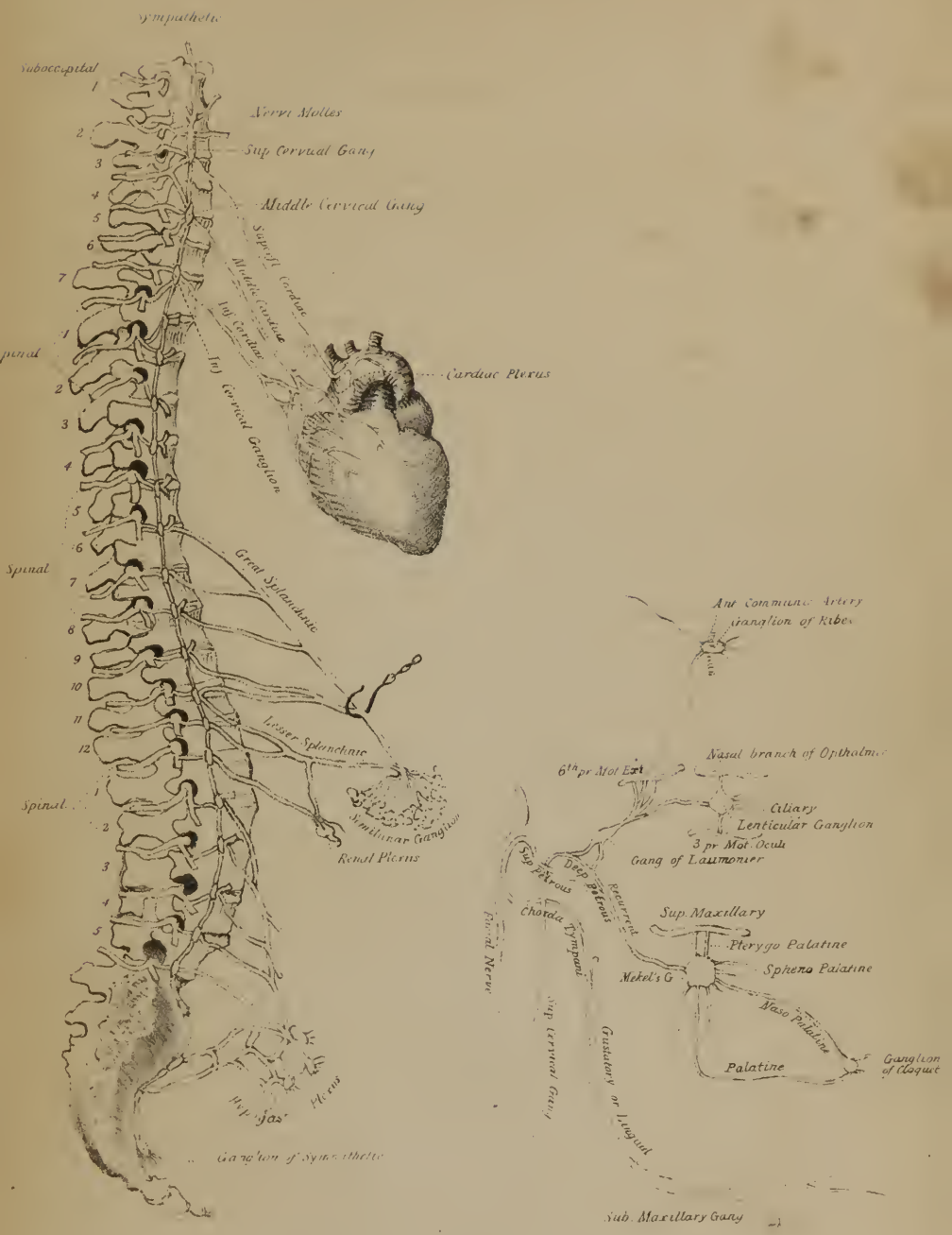
This nerve consists of a chain of ganglions placed upon the sides of the bodies of the vertebræ, extending from the base of the cranium to the end of the sacrum. They are united to each

other by filaments, and also to the anterior trunks of the spinal nerves. The origin of the sympathetic nerve was formerly described as the ganglion of Laumonier, which is formed in the carotid canal and joined by a branch of the fifth pair, called Deep Petrous, and by a branch of the sixth pair, or Motor Externus. Now the sympathetic is to be traced from the ganglion of Ribes, which is formed upon the anterior communicating artery in the middle of the base of the brain. This anastomosis is exhibited in Plate VI., Fig. 2. The ganglions of the sympathetic are placed opposite the intervertebral spaces throughout the spine, with the exception of those of the neck, which are but three in number, viz.:

SUPERIOR CERVICAL GANGLION—Varies considerably in its size and extent, commencing opposite the second vertebra, and reaching to the third or fourth. It sends off branches of a reddish color, which are extremely soft, and hence are called *Nervi Molles*. These are divided into Superior, Middle, and Inferior. The Inferior form by their union a cord called the *Superficial Cardiac Nerve*, which descends along the neck, and is lost in the middle cardiac nerve and contiguous anastomoses.

MIDDLE CERVICAL GANGLION—Is placed between the fifth and sixth cervical vertebræ, upon the Longus Colli muscle. It sends off numerous filaments, some of which collect into a cord, which is called the *Middle Cardiac Nerve*, which anastomoses with Superficial Cardiac and Pneumogastric, and extends to the Cardiac Plexus.

INFERIOR CERVICAL GANGLION—Is situated near the head of the first rib, and varies in form and size. Its branches are numerous, some of which collect into a cord, and form the Inferior Cardiac nerve, which is blended with the Cardiac Plexus on the right side, and with the Middle Cardiac nerve on the left. The Cardiacs of the right side are more constant than those of the left.


Sympathetic
Suboccipital
1
Nervi Molles
2
Sup Cervical Gang
3
4
Middle Cervical Gang
5
6
7
Spinal
1
2
3
4
5
6
Spinal
7
8
9
10
11
12
Spinal
1
2
3
4
5
Superf. Cardiac
Middle Cardiac
Inf Cardiac
Inf Cervical Ganglion
Cardiac Plexus
Great Splanchnic
Lesser Splanchnic
Semilunar Ganglion
Renal Plexus
Hep. Gas.
Plexus
Ganglion of Sympathetic
Ant Communic. Artery
Ganglion of Ribes
Nasal branch of Opthalmic
6th pr Mot Ext
Ciliary
Lenticular Ganglion
3 pr Mot Oculi
Gang of Laumonier
Sup Petrous
Deep Petrous
Recurrent
Sup. Maxillary
Chorda Tympani
Facial Nerve
Pterygo Palatine
Meckel's G
Sphero Palatine
Naso Palatine
Palatine
Ganglion of Cloquet
Sup Cervical Gang
Gustatory or Lingual
Sub. Maxillary Gang

W L sc

CARDIAC PLEXUS,

Is situated between the arch of the aorta and the bifurcation of the trachea. It is formed by branches from the three cervical ganglions of each side of the neck, but principally from the Middle Cardiac Nerves. It is also joined by filaments from the par-vagum, and inferior laryngeal. The branches of the Cardiac Plexus are divided into Anterior, Posterior, and Inferior. The Anterior and Posterior branches are spent about the roots of the large vessels. The Inferior branches are the largest and most abundant; and are arranged into two Plexuses, called Anterior and Posterior Coronary, from which filaments are distributed to the auricles and ventricles of the heart.

THORACIC GANGLIONS OF THE SYMPATHETIC.

These are twelve in number, placed at the intervertebral spaces, near the heads of the ribs. They are united to each other and to the spinal nerves.

Great Splanchnic Nerve is formed by filaments from the sixth to the ninth or tenth ganglions inclusively, which is directed downwards, and enters the abdomen at or near the foramen aorticum of the diaphragm. Whilst in the abdomen it divides into fasciculi; upon which are formed the small ganglions which are fused in a crescentic manner, and called the *Semi-lunar Ganglion.*

Small Splanchnic Nerve is formed by filaments of the tenth and eleventh Thoracic Ganglions. It reaches the abdomen by penetrating the crus of the diaphragm, and then divides into two branches, one of which joins the great splanchnic and the other descends to the Renal Plexus.

SOLAR PLEXUS.

The origin of the Solar Plexus may be considered to be the Semi-Lunar Ganglion. This ganglion is semicircular or oval, is

about an inch in length, and is placed on the side of the aorta, it is composed of smaller ganglions, formed upon filaments of the splanchnic nerves. From it proceeds the *Solar Plexus*, which extends along the aorta to the cœliac and to the emulgent artery, and is common to both sides. From it are derived several smaller plexuses, accompanying the large arterial trunks, from which these several intertextures derive their names;—for instance, the *Hepatic Plexus*, supplying the liver, gall-bladder, &c., surrounding the Hepatic Artery. The *Splenic Plexus* surrounding the Splenic Artery supplies the Spleen. *The Superior Mesenteric, Renal, and Inferior Mesenteric Plexuses* surround the *Superior Mesenteric, Renal*, and *Inferior Mesenteric Arteries.*

HYPOGASTRIC PLEXUS,

PLATE VI.

Is situated in the lower part of the pelvis, and is formed by filaments from the Lumbar ganglions, through the Inferior Mesenteric Plexus, and by means of filaments from the Sacral ganglions, which are usually three in number. This plexus is distributed upon the rectum and bladder, organs of generation, &c. The last Sacral ganglion, called *azygos* or *impar*, is situated in front of the coccyx, and terminates the sympathetic nerve.

SPINAL NERVES.

These are usually thirty in number, and are divided into 1 sub-occipital, 7 cervical, 12 dorsal, 5 lumbar, and 5 sacral. Each arises by two roots from the spinal marrow, which unite in the intervertebral foramen. Before their union, an oval ganglion is formed upon the posterior and larger root. After their union, they divide into *posterior* and *anterior trunks.* [Plate VII., Fig. 2.] The sacral ganglions are in the spinal canal.

Nerves

Plate 7th

Fig. 1.

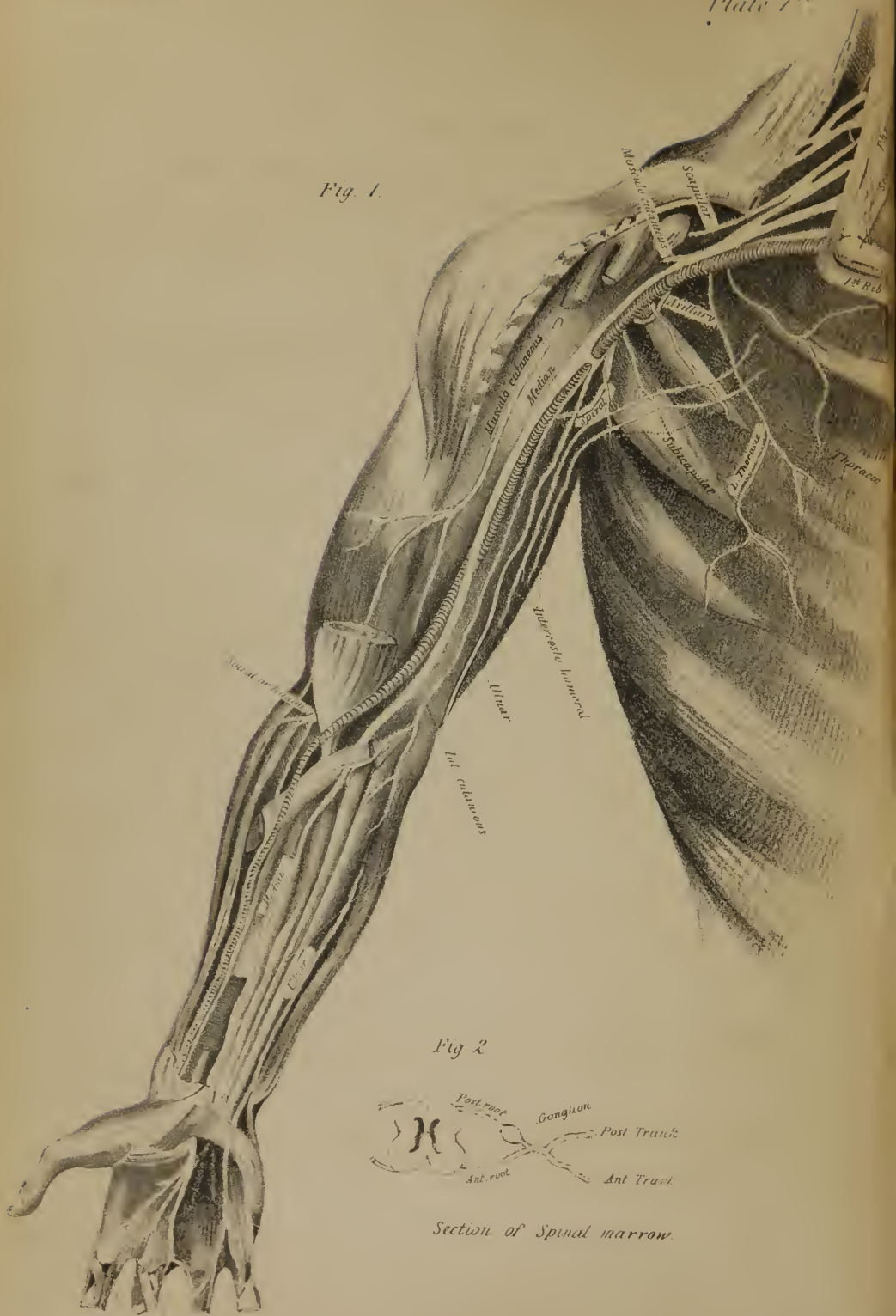


Fig 2

Section of Spinal marrow.

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SUB-OCCIPITAL NERVE.—This nerve is exceedingly small, and generally arises by a single root from the spinal marrow. It passes out of the vertebral cavity between the occiput and the atlas, and supplies the muscles on the back of the neck and head. [Plate VI.; and Plate IV., Fig. 1.]

THREE SUPERIOR CERVICAL NERVES.—After escaping through the intervertebral foramina, they divide into anterior and posterior trunks. The posterior trunks are spent upon the muscles upon the back of the spinal column. The anterior trunks form a Plexus, branches from which supply the muscles of the neck; and *cutaneous* branches are distributed to the integuments. The *Great Auricular* branch passes behind the ear.

PHRENIC NERVE.—This nerve is formed from the second and third cervical, descends upon the front of the scalenus anticus muscle, and then enters the thorax through the superior mediastinum; passing over the pericardium is distributed to the diaphragm.

FOUR INFERIOR CERVICAL NERVES. PLATE VII.—The posterior branches are distributed to the muscles and back. The anterior branches are larger, and descend between the scalenus anticus and scalenus medius muscles, above the subclavian artery, to form the brachial plexus.

BRACHIAL OR AXILLARY PLEXUS.—This plexus is formed by the junction of the four inferior cervical nerves and the first dorsal, and extends from the scaleni muscles to the neck of the humerus, surrounding the axillary artery. It gives off the following nerves, viz:

Scapular.—It passes backwards over the shoulder, through the coracoid notch of the scapula, and is distributed to the spinati muscles.

Subscapular.—These are usually three in number. They are distributed to the subscapularis and teres muscles.

Thoracic. — These are two in number, are distributed to the subclavius and pectoralis minor and major muscles and integuments. The *posterior* or *long* thoracic is the External Respiratory Nerve of Bell, and is distributed to the Serratus Anticus muscle.

Axillary or Circumflex. — It descends and winds around the head of the os humeri, running with the posterior circumflex artery, and is distributed to the deltoid muscle.

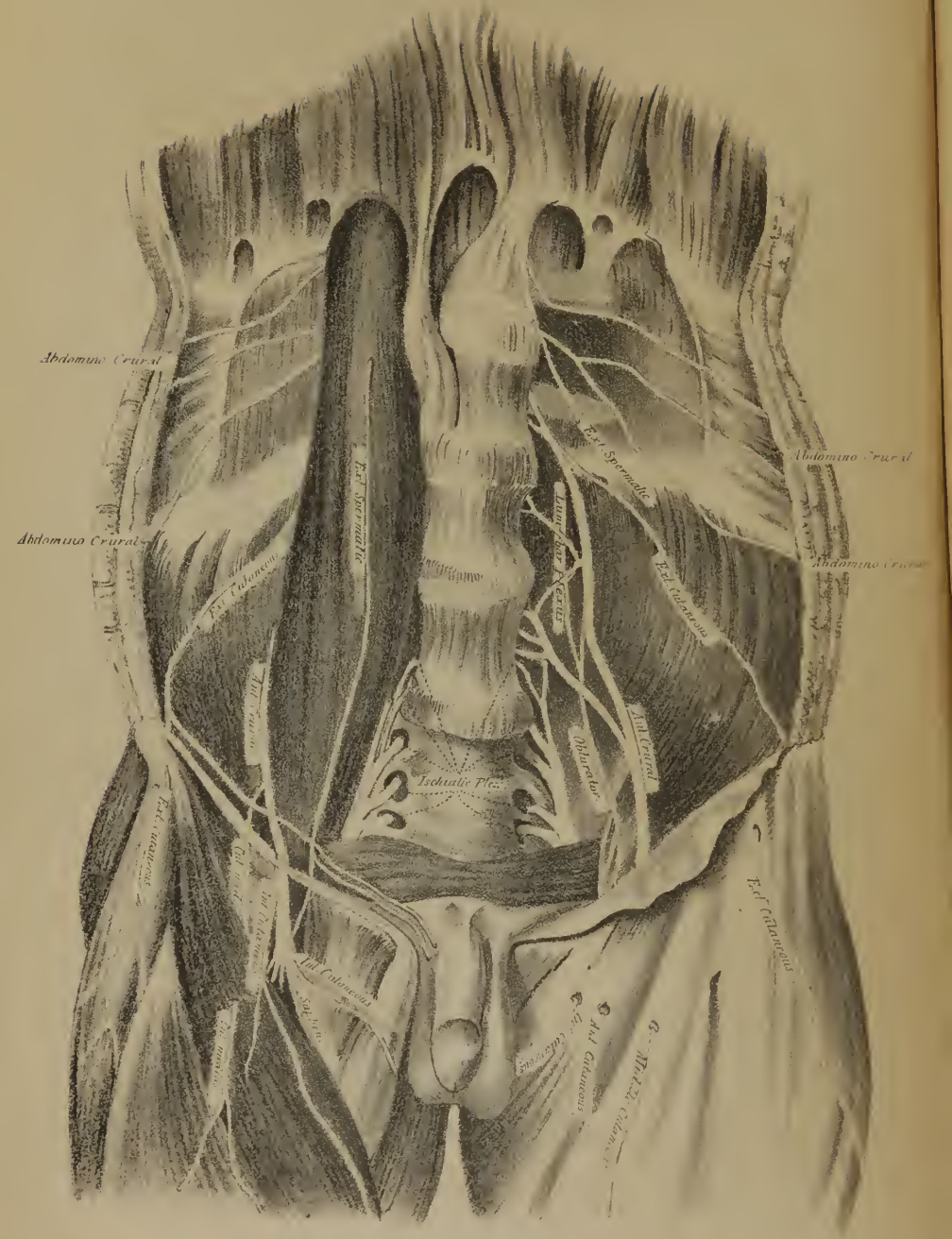
Internal Cutaneous — Is a small, thin nerve, descending the arm, dividing into several branches at the elbow, and is distributed to the integuments. Some of the branches reach the hand.

Musculo Cutaneous, or *External Cutaneous.* — It descends and perforates the coraco brachialis. At the elbow it divides into several branches, supplying the muscles of the arm, and the integuments of the fore-arm and hand.

Radial or *Musculo-Spiral.* — This is very large, and winds spirally around the humerus, passing between the first and third heads of the triceps muscle, making its appearance near the external condyle. It divides into three principal trunks — Superficialis, Anterior and Posterior, and Profundus Dorsalis. They are distributed to the muscles of the arm, fore-arm, and hand.

Median Nerve. — This is one of the largest branches of the Brachial Plexus. It descends on the inside of the biceps muscle, firmly adhering to the brachial artery. It then passes between the two heads of the pronator teres muscle, and, descending the fore-arm between the flexor sublimis and flexor longus pollicis muscle, it passes under the annular ligament of the wrist, terminating in branches which supply each side of the thumb and fingers, with the exception of the little finger and the ulnar side of the ring finger.

Ulnar. — It descends the arm upon the anterior part of the triceps muscle, and passes under the internal condyle, where it is quite superficial. It gives off several branches, which supply the muscles of the fore-arm, and passing over the annular ligament of the wrist, it sends branches to each side of the little finger, and to the ulnar side of the ring finger.


Abdomino Crural
Abdomino Crural
Ext Spermatic
Ext Cutaneous
Ext Cutaneous
Ext Spermatic
Lumbar Nerves
Ext Cutaneous
Abdomino Crural
Abdomino Crural
Int Crural
Obturator
Ischiatic Plex
Ext Cutaneous
Int Cutaneous
Int Cutaneous
Ext Cutaneous
Int Cutaneous

DORSAL NERVES. — The posterior branches are distributed to the muscles of the back, and the anterior branches generally accompany the intercostal vessels in the groove at the inferior edge of each rib. They are spent upon the abdominal muscles and integuments. The *first* joins the axillary plexus, the *second* and *third* give off two branches called the Intercosto-Humeral, which join a small branch from the nerve of Wrisberg, and are distributed to the integuments of the axilla and arm. The twelfth sends a branch to join the first lumbar.

LUMBAR AND SACRAL NERVES. — The posterior branches are spent upon the muscles of the loins and back; the anterior branches form a large plexus called Crural, which is divided into two parts called Lumbar and Ischiatic.

LUMBAR PLEXUS,

Is formed by four superior lumbar nerves; is concealed by the psoas magnus muscle, and gives off the following branches, viz:

Abdomino Crural. — These are three in number; they arise from the upper part of the plexus, and descend obliquely over the quadratus lumborum muscle towards the crista of the ilium. They send branches to the abdominal muscles and through the rings to the pubes, and also send filaments to the integuments of the hip and thigh.

External Spermatic penetrates the psoas magnus muscle, upon which it descends. It sends branches to the groin and cremaster muscle.

External Cutaneous passes obliquely outwards over the iliacus internus muscle towards the anterior superior spinous process of the ilium, and, penetrating Poupart's ligament, is distributed to the integuments of the outer portion of the thigh.

Anterior Crural is the largest branch arising from the lumbar plexus. It passes beneath the psoas magnus muscle, and emerges from the abdomen under Poupart's ligament, about half an inch from the outside of the femoral artery. It gives off several branches.

Cutaneous Medius — Arises from the anterior crural, about an inch above Poupart's ligament: descending, it penetrates the Sartorius Muscle, and is distributed to the integuments.

Anterior Cutaneous — Arises from the Anterior Crural, penetrates the fascia of the thigh, and is distributed to the integuments.

Internal Cutaneous — Is another one of the same cluster, arising from the Anterior Crural, above Poupart's ligament, and is distributed to the integuments on the inside of the thigh.

Saphenus — Is a filament of the Anterior Crural which accompanies the femoral artery till it perforates the adductor magnus. It then attaches itself to the saphena major vein, and is distributed to the integuments upon the inner side of the leg and foot.

Obturator — Is derived from the lumbar plexus, and descends into the pelvis from beneath the psoas magnus muscle. It then passes forward through the obturator foramen, and dividing into two branches is distributed to the adductor muscles of the thigh.

SCIATIC PLEXUS.

This plexus is formed by the junction of the last Lumbar and the four Superior Sacral nerves. It is situated in the back portion of the pelvis, and in front of the Pyriformis Muscle. The fifth and sixth, if the latter should exist, are distributed to the muscles about the anus. This plexus gives off the following branches:

Gluteal. — These are two in number; one passes out of the Sciatic notch, above the Pyriform Muscle, and the other below it. They are distributed to the Glutæi Muscles.

The Pudic or *Superior Long Pudendal.* — It accompanies the Internal Pudic artery, between the two Sacro-Sciatic ligaments, and is distributed to the Perinæum and organs of generation.

The Lesser Ischiatic escapes from the pelvis between the Pyriformis Muscle and the Greater Sacro-sciatic Ligament, and gives off:

The Perineal or *Inferior Long Pudendal*— Passes under the tuber of the Ischium, and is distributed to the Glutæus Maximus, and to the external parts of the organs of generation.

Posterior Cutaneous— Is given off from the plexus in common with the Inferior Pudendal; descends the back of the thigh, and is distributed to the skin.

SCIATIC OR ISCHIATIC— Is the largest nerve in the body. It escapes from the Pelvis through the Sacro Sciatic notch, above the ligaments and between the Pyriformis and Geminus Superior Muscles. It descends the back of the thigh beneath the Biceps Flexor Cruris Muscle, and below the middle divides into two large trunks, called Peroneal and Popliteal; previous to which, however, it gives off several cutaneous and muscular branches of small size.

Peroneal— Extends from the bifurcation of the Sciatic, towards the External Condyle, and gives off the two following branches:

External Peroneo-Cutaneous— Is spent upon the skin over the fibula.

Internal Peroneo-Cutaneous— Descends under the external head of the Gastrocnemius, and between the knee and ankle joins the Externus Saphenus or Communicans Tibiæ, which is a branch of the Posterior Tibial. The Peroneal thence is directed towards the head of the Fibula, and divides into two large branches, viz:

External Peroneal— Descends from the head of the Fibula, giving off filaments to the muscles arising therefrom. At the lower part of the leg it becomes Superficial, and gives off cutaneous branches about the External Malleolus, instep and toes.

Anterior Tibial— Commences at the bifurcation of the Peroneal; passing under the heads of the muscles, reaches the Interosseous ligament, upon which it descends in company with the An-

terior Tibial artery. It is distributed to the muscles and integuments upon the upper surface of the foot, one branch descending to the sole in company with the Pedal artery.

Popliteal — Descends between the heads of the Gastrocnemius, and then perforates the Soleus muscle. Below the knee it receives the name of Posterior Tibial.

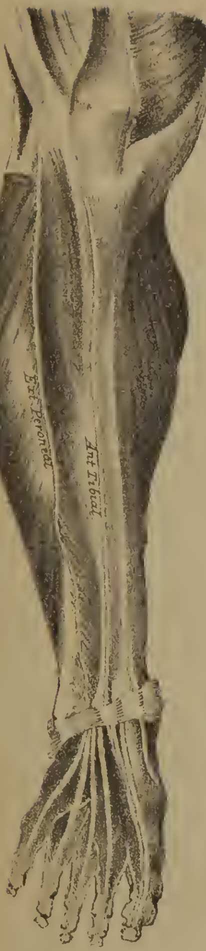
External Saphenous — Is given off from the Popliteal; descending anteriorly it is joined by the Internal Peroneo-Cutaneous. The common trunk thus formed passes behind the External Malleolus, and gives off cutaneous branches to the foot and toes.

Posterior Tibial — Descends upon the back of the leg under the Triceps Suræ Muscle, in company with the Posterior Tibial artery: it gives off numerous muscular branches, and passing under the sinuosity of the os calcis, it divides into the following:

External Plantar — Accompanies the External Plantar artery along the outer edge of the sole of the foot. It sends off branches to the muscles of the sole, to the little toe, and to the outer side of the next toe.

Internal Plantar — Is larger than the external, and passing along the inner edge of the foot is distributed to both sides of the three inner toes and the inside of the fourth toe.

FINIS.


Ext Peroneal
Int Tibial


Gluteal
Gluteal
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Post Cutan
Peroneal
Popliteal
Post Tibial
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Post Tibial
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